The MAC Flyer

NOVEMBER 1979

THE MAC FLYER OFFICIAL READERSHIP SURVEY

(Please circle your response choices)

1. HOW MANY ISSUES OF THE MAC FLYER HAVE YOU SEEN IN THE PAST 12 MONTHS?
   0 1 2 3 4 5 6 (7) 8 9 10 11 12

2. HOW SOON AFTER PUBLICATION COVER MONTH DO YOU USUALLY SEE EACH ISSUE?
   Early same month - (Middle same month) - Late same month - Month after - Even later

3. WHERE DO YOU USUALLY GET YOUR COPIES OF THE MAC FLYER?
   Normal distribution - (Work center) - Another person - Mail - Other *(stolen, etc.)*

4. HOW MUCH DO YOU FEEL THE FLYER HAS INCREASED YOUR SAFETY AWARENESS?
   A great deal - (Some) - A little - Not much - Not any

5. ABOUT HOW MUCH OF THE MAC FLYER DO YOU USUALLY READ PER ISSUE?
   Cover to cover - 75% - (50%) - 25% - One or two articles - None

6. HOW DO YOU RATE THE FLYER'S OVERALL APPEARANCE?
   Pleasing - (Interesting) - Uninteresting - Needs more/less artwork - (Needs more/fewer photos) - Dull

7. PLEASE RATE THE FOLLOWING FEATURES AND ARTICLES FOR CONTENT AND FREQUENCY OF APPEARANCE:

TOP 3 CHOICES	ITEM	CONTENT (1=Yuck - 5=Great)					FREQUENCY		
		1	2	3	4	5	NEED MORE	OK	NEED LESS
	Flyer Forum *(reader opinions)*			✓					
	Staff articles and features				✓			✓	
1	Mishap with a Moral				✓			✓	
	The Airlift Legacy *(centerfold)*				✓		✓		
	The Sage Brush *(cartoon)* POPULAR, BUT PCS AFTER JULY ISSUE				✓			✓	
	Deja Vu *(airfield survey)*								
3	C.R. Terror			✓				✓	
2	Quick Stoppers *(short mishaps)*				✓			✓	
	Flight Lines *(letters to the editor)*				✓		✓		
	Writing Contest Winning Articles			✓					✓
	Good Show *(attaboys for airmen)*			✓					✓
	Global Notes *(items of interest)*				✓			✓	
	After Deadlines *(last minute items)*				✓			✓	
	Other *(you specify)*				✓			✓	

8. MY AIRCREW POSITION IS: (Pilot) - (Navigator) - (Engineer) - (Loadmaster) - (Flight Nurse) (Attendant) - (Other) - N/A → PARARESCUE SPECIALISTS

9. TYPE ACFT QUALIFIED IN: C-5, C-141, C-130 C-9, CT-39, H-53, H-3 H-1.

COMMENTS

KEEP UP THE GOOD WORK!

SEE .....Pg 4

The MAC Flyer

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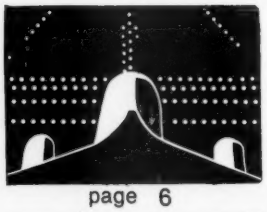

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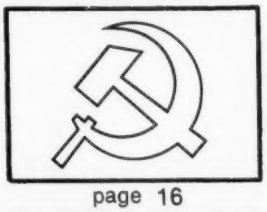

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Contributions, comments and criticisms are welcome. Write: *The MAC Flyer*, HQ MAC/IGFE, Scott AFB, IL 62225; or call: 618-256-3534, or autovon 638-3534. The editor reserves the right to change manuscripts to improve them or correct technical errors.

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Flyer Call

The results of our readership survey indicated, among other things, that some folks have grown tired of the centerfolds on MAC airplanes that we've been running for some months ("The Airlift Legacy" series). In order to try and rekindle interest in this feature, which we feel is a good idea, we are going to take a look at some of our chief competitor's mission-related aircraft this month and in forthcoming issues of *TMF*. If imitation is really a form of flattery, then we should feel quite honored after seeing how close some of Russia's heavy haulers resemble their MAC counterparts. Our initial research reveals a vital and growing Soviet interest in strategic and tactical airlift in recent years as they realized, along with American military planners, just how critical the ability to move men and materiel quickly to a battle zone anywhere in the world is. So, take a look at our centerfold and those to come, and familiarize yourself with Ivan's airlifters. Chances are you'll probably be seeing them at international aerial ports out in the system with increasing frequency. You may even have the chance to impress your fellow crewmembers with a quick, knowledgeable ID when somebody points and says, "What's *that*?"

JGG

FLYER FORUM

Regulating Complacency

Frequently, the initial reaction when things are not going well in a military organization is to dictate additional restrictions in an effort to correct the problem. But is this really the type of corrective action that should be implemented? Do the added restrictions really accomplish anything other than hindering operations? Perhaps, instead of instinctively trying to solve a problem through more regulation, those currently in effect should first be studied and reevaluated. Revision may be called for, but maybe the problem has nothing to do with regulations. Perhaps it is caused by something else. . . . something called complacency.

The Flight Safety Foundation recently published a survey conducted to find new ways to communicate safety needs to commercial airline passengers. The airlines found that the first-time flyer listens most closely to the flight attendant's talk on safety regulations, mentally notes where the nearest emergency exits are, reads all the safety instructions provided, and consequently is the person most likely to survive a crash. Isn't this similar to the aircrewmember or mechanic just checking out, or transitioning to a new or different airplane? They study the manual intently, memorize emergency procedures and are "up" for meeting most problems that might arise.

But as time passes, and more experience is gained, things change. The airlines found that passengers who fly frequently fail to devote much attention to the safety instructions being given by the attendants. In fact, one stewardess deliberately made ridiculous statements while she was giving her presentation and not one passenger even commented or questioned the inaccuracies. This blase attitude has caused alarm in the aviation industry, for the nonchalant passenger may perish because he or she cannot remember what is important.

Just as commercial airline passengers develop nonchalance over time, crewmembers gaining experience and becoming more familiar with the equipment also cease to pay as much attention to detail as before. It's no wonder when something out of the ordinary happens, they may not be prepared.

This blase attitude is contagious; anyone can be affected. A meteorologist may contract it after a year of good weather, a pilot after many "uneventful" missions, or a maintenance person after he or she takes the same shortcuts so often they become habits. There are already regulations covering all these activities, but complacency can get in the way and cause an accident.

—Adapted from USN *Weekly Summary*

Flyer Feedback

The tabulated results of this year's *TMF* readership survey tell us that, by and large, most of you were pretty well satisfied with the magazine during the past two years. Although there are indications of some problems with distribution that need to be looked at, the fact that most people saw more than half the issues printed is heartening; as is the indication that most people read at least half of each issue they saw. Statistics on frequency of individual features and articles didn't indicate to us that any drastic changes need to be made, but some of the "write-in" suggestions will probably result in minor alterations in the format and content for a couple of the regular *TMF* features.

On the cover, you can see what we have determined as representative of a "typical" survey after compiling all the scores. The numbers, however, only tell part of the story. Most interesting and illuminating to us (and we hope to you also) were some of the extremely candid remarks made in the "comments" block. Some have given us new ideas for the *Flyer*, some confirmed suspicions we already held, some left us puzzled, and a number contradicted each other. Here, along with our comments where appropriate, are samples ranging from critical to congratulatory.

On slighted crew positions:

Several loadmasters and flight engineers—"Would like to see more articles concerning our crew positions." C-141 F.E.—"Seldom see articles that pertain to the enlisted position . . . it takes an entire crew to move an aircraft safely and efficiently." P.J.—Pararescue Specialist is also a MAC crew position, not just an 'other'." C-5 F.E.—"I didn't know you knew flight engineers existed." (We do know all you enlisted folks are out there doing a great job, but we don't hear from you. Send us tips, ideas, manuscripts, etc., and you will start seeing more about yourselves in *TMF*.—Ed.)

On Availability of the *Flyer*:

A variety of crewmembers—"We need more *Flyers* in the squadron." "Increase distribution to work centers." "More crewmembers could see it more often if it was distributed to places where we go, like BOQ lounges, snack bars, restroom read files, etc." (Distribution to units can't be increased unless we get legitimate requests through the pubs distribution folks. Currently, the ratio is one *Flyer* for every five crewmembers. If your unit needs more than it is now getting or if the ones you receive aren't getting circulated let your PDO know.—Ed.) C-130 Nav—"I have been collecting the Flyer and have not had a chance to read them yet." (Perhaps we have just uncovered the reason why there is a shortage of Flyers. —Ed.)

On Uses for The *Flyer*

C-5 Pilot—"I use *TMF* material in the MAC Instructor Pilot Course." HC-130H/P/N Radio Operator—"I teach Rescue Radio Operators and I use many of the articles to drive home a point of flying safety . . . most valuable to me as an instructor and flyer."

On Handling of Accident Articles:

C-130 Pilot—"Basic problem is focus on negative side." C-9 Pilot—"Every article is recognizable by personnel in the real Air Force Unit involved regardless of *FLYER* camouflaging effort and makes the particular aircrew look bad. I feel no purpose is served by degrading any aircrew in any readers' eyes." C-130 F.E.—"Instead of analyzing other people's screwups, how about readers supplying articles and war stories telling how they prevented an accident?" (Send 'em in, we can use 'em.—Ed.) C-141 Pilot—"Pattern 'Mishaps with a Moral' after Pan Am's *Crosscheck* magazine to give more detailed info . . . have more civilian airline incidents as they closely parallel our opera-

tions." (Six of the last 12 "Mishaps with a Moral" delt with civilian aircraft incidents. —Ed.) C-141 Pilot—"Tis good to learn from the misfortunes and accidents of others so they won't be so likely to happen to you . . . . We can determine exactly what went wrong and thus avoid the same mistakes."

(Real accidents and mishaps are our best source of examples and lessons, and we will continue to draw on them for source in our efforts to offer food for thought on flying safety. —Ed.)

On The "Final Solution":

C-5 Pilot—"Get rid of the writer who invents gloppy phrases like 'MAC menagerie of multi-motored aviators'." (There goes the whole staff.—Ed.) C-130 L M —"Cease publication of *The MAC Flyer* Will save money and time." (There goes the whole magazine.—Ed.)

On C.R. Terror:

HC-130 Pilot—"C.R. Terror at one time was outstanding. You seem to have lost the ability to be subtle." (Modesty, not subtlety has always been my most redeeming quality, as everyone knows.—C.R. Terror) C-141 F.E.—"Want to see C.R. Terror and his boys at Clark." (Things must have slowed down considerably in Angeles City.—Ed.)

On "How 'Bouts":

C-9 Pilot—". . . more stateside Deja Vus?" (Wilco—Ed.) C-141 Pilot—". . . try some new ideas?" (How 'bout suggesting some? Meanwhile check out our new slant on "The Airlift Legacy" in the November issue.—Ed.) C-5 Nav—". . . more articles on MAC newsworthy missions?" C-5 L M —". . . an article on loading/offloading safety procedures?" C-130 L M —". . . more articles that deal with the largest part, the back end, of the aircraft?" C-130 Pilot—". . . more tactical operations features? C-5 F.E.—"more from F.R.E.D. and the boys?" C-5 Pilot—". . . more articles involving folks who fly the line?" (We'd like all those things too, and we'll try and accommodate as many suggestions as we can in upcoming issues, but we sure could use some help in the form of inputs from the field with war stories, ideas, manuscripts, photos, etc. Let us know about your adventures and accomplishments and we'll pass 'em along for everybody's benefit and enlightenment.—Ed.)

On Beauty and the Beholder:

C-130 Pilot—"Appearance is dull: needs a facelift on the cover." CT-39A Pilot—"Don't change. Keep same format." C-130 Pilot—"Writing contest articles' style tends to be aimed too low and too morbid." H-53 Pilot—" 'Good Show' sounds like awards and decorations material . . . inflated words and stiff looking photos." C-141 Aircraft Commander—"One of the more beneficial pieces of literature in the Air Force today." C-130 Pilot—"Easily readable and stays close to the point of flying airplanes." C-141 Pilot—"Especially good articles on wind shear, landing illusion, flight hazards and see and avoid."

On Balance:

H-3 Pilot—". . . good balance of information, discussion and humor with a point." C-141 Pilot—"Generally good mix of rotary wing, strat and tac airlift articles." C-9 Pilot—"I have yet to read any C-9 articles in three years." (Where have **you** been? Try the June *TMF's* "Obscured Decision" for openers.—Ed.)

It is obvious from the above potpourri of reactions from *TMF* readers that we are pleasing some readers and displeasing others, but for the most part the survey results were complimentary and encouraging. We'll close with our favorite comment and the one that we shall consider our mandate for forthcoming issues. Along with the most frequently repeated attaboy, "Keep up the good work," was this ego-boosting jewel from a C-141 Pilot, "All I can say is the more you print the more I'll read." With that in mind, we shall press on smartly.

Note: For those of you who didn't see a survey, and may have wondered why, this year's was handled a little differently than it was in previous years. Instead of placing it inside the magazine to be filled in, torn out, and mailed to us at each reader's option, we sent suitable numbers of copies to safety officers at a representative selection of MAC units stateside and overseas. Enough units were picked so that just about all the types of aircraft and missions flown by MAC aircrews were covered. From a statistical standpoint, the returns were extremely gratifying, and we feel that this perhaps is the most valid cross-section of aircrew reaction to *The MAC Flyer* that has ever been obtained. There is certainly no doubt about it being the largest ever, considering that a total of 823 surveys were returned. The total, incidently, included a significant number of returns from each of the bases sampled.—Ed.

A Year-Round Hazard

Most of us are familiar with sharp variations in winds occurring in the environs of thunderstorms and producing low-level wind shear hazards for arriving and departing airplanes. But wind shear can result from a variety of weather phenomena any time of year, not just during the CB season.

A recent FAA Advisory Circular reviewed the causes and effects of rapidly changing wind direction and speed on airplanes. Here are some highlights.

Fronts

In addition to thunderstorms, certain frontal systems are the most prominent cause of significant low-level wind shear problems at or near airports.

Winds can be significantly different in the two air masses which meet to form a front. While the direction of winds above and below a front can be accurately determined, existing procedures do not provide precise, current measurements of the height of the front above the airport. The following methods can, however, determine the approximate height of the wind shear associated with a front.

Wind shear occurs with a cold front just after it passes the airport and for a short period thereafter. If it is moving 30 knots or more, the frontal surface will usually be 5,000 feet above the airport about three hours after frontal passage.

With a warm front, the most critical period is before it actually passes the airport. Warm front shear may exist below 5,000 feet for approximately six hours before the front actually comes through. The problem ceases to exist after it passes the airport. Data compiled on wind shear indicates the amount of shear in warm fronts is much greater than in cold fronts.

Turbulence may or may not exist in wind shear conditions. If the surface wind under the front is strong and gusty, there will be some turbulence associated with it.

Other phenomena with high wind shear potential are strong surface winds, sea breeze fronts, and mountain waves.

Strong Surface Winds

Combinations of strong winds and small hills or large buildings that lie upwind of the approach or departure path can produce localized areas of shear. Observing the local terrain and requesting pilot reports of conditions near the runway are the best means of anticipating wind shear from this source. This type of shear can be particularly hazardous to light airplanes.

Sea Breeze Fronts

The presence of large bodies of water can create local airflows due to differences between the land and water temperatures. Changes in wind velocity and direction can occur in relatively short distances in the vicinity of airports situated near large lakes, bays, or oceans.

Mountain Waves

These weather phenomena often create low-level wind shear at airports that lie downwind of the wave. Altocumulus standing lenticular clouds usually indicate the presence of mountain waves, and they are clues that shear should be anticipated.

Airplanes may not be capable of safely penetrating all intensities of low-level wind shear. Pilots should, therefore, learn to detect, predict, and avoid severe wind shear conditions. Wind shear does not strike without warning. It can be detected by the following methods:

Preflight Analysis

If thunderstorms are observed or forecast at or near the airport, be alert for the possibility of wind shear in the departure or arrival areas.

Check the surface weather charts for frontal activity. Determine the surface temperature difference immediately across the front and the speed the front is moving. A 10 degree (F) or greater temperature differential, or a frontal speed of 30 knots or more, are indications of the possible existence of significant low-level wind shear.

PIREPS

Watch for pilot reports of wind shear. The Airman's Information Manual recommends that pilots report any wind shear encounter to Air Traffic Control. This report should be in specific terms and include the loss or gain of airspeed and the altitude at which it happened. For example: "Dover tower, MAC 007 encountered wind shear, loss of 20 knots at 400 feet." This simple report is extremely important so that the pilot of the next airplane in sequence can be forewarned. Reported shear that causes airspeed changes in excess of 15 to 20 knots should be avoided.

Assume that severe wind shear is present when the following conditions exist in combination.

- Extreme variations in wind velocity and direction in a relatively short time span.
- Evidence of a gust front such as blowing dust near the surface.
- Surface temperature in excess of 80 degrees (F).
- Dew point spread of 40 degrees (F) or more.
- Virga (precipitation that falls from the bases of high altitude cumulus clouds but evaporates before reaching the ground).

Aircraft Instruments

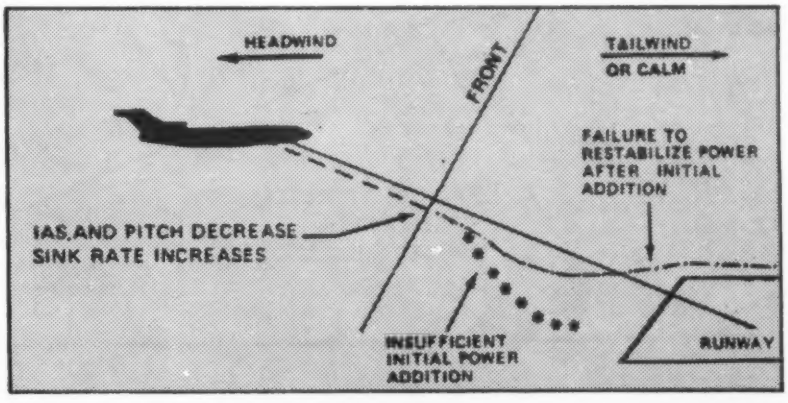
Pilots flying airplanes equipped with INS should compare the winds at the initial approach altitude with reported runway surface winds to see if there is a wind shear situation between the airplane and the runway.

If frontal activity does exist, note the surface wind direction to determine the location of the front with respect to the airport. If the airplane will traverse the front, compare the surface wind direction and speed with the wind direction and speed above the front to determine the potential wind shear during climbout or approach.

Compare groundspeed with airspeed. Any rapid changes in the relationship between the two represents a wind shear.

For airplanes which don't have INS or groundspeed readouts, monitoring aircraft performance can reveal wind shear conditions. By observing the aircraft's approach parameters—rate of descent, power, and pitch attitude—pilots can obtain a feel for the wind they are encountering. Comparing wind direction and velocity at the initial phases of the approach with the reported surface winds provides an excellent clue to the presence of shear before it is actually encountered.

Applying these techniques of detection go a long way in keeping you on top of the situation and preventing those surprises that all of us who fly would just as soon avoid.



Possible frontal shear effects.

Mishap with a Moral

Cleared to Cross

It certainly wasn't the most beautiful morning the 727 flight crew had ever seen at Chicago's O'Hare Airport. Cold grey clouds huddled close to the ground as if seeking protection from the freezing drizzle, fog and haze. Visibility was only one-half mile. After engine start, the Boeing jet carrying 115 people was cleared to runway 04 Right for departure. As is common at airports with multiple runways, their taxi route crossed runway 9R, the active landing runway. Initially, the outbound ground controller instructed the airliner to stop before crossing the active. However, as they approached it, he cleared them to "cross runway niner-right."

At the same time, a Boeing 747 cargo carrier was completing an ILS approach to 9R and had been cleared to land by the local "arrival" controller. Shortly after touchdown the pilot saw the passenger liner entering the runway directly in front of him. Attempting to avoid a collision, he

steered the jumbo jet to the right, swerving off the pavement at a 16-degree angle and ploughing through a three-foot high snow bank. Both main landing gear were sheared off and considerable structural damage to the lower fuselage occured before it finally came to a stop. The 727 crew reported that the big Boeing's left outboard wing passed directly over their cockpit. The passenger jet didn't receive a scratch and there were no injuries to the occupants of either aircraft, but only a monumental amount of luck prevented this incident from ending in a collision and the loss of many lives.

NTSB officials concluded that the probable cause was the outbound controller issuing an improper clearance and also the failure of the 727 pilots to maintain a continuous vigil for landing traffic.

Several factors contributed to these conclusions and shed light on exactly how such a potentially disastrous oversight can occur. MAC crews operate through busy airports every day, but there are things to learn from this mishap to help us fly safer any place we go.

Radar Sequencing

The 747 didn't have the required four-mile minimum radar separation set forth in the FAA handbook for aircraft following wide bodied planes. The jumbo jet was only two-miles behind another wide bodied aircraft that had just landed. As the first airplane cleared the runway, the local controller immediately issued the 747 a landing clearance. The Board's conclusion was that, had the local controller sequenced the two arriving flights at the required four mile interval, the ground controller would have had adequate spacing to clear the 727 across the active runway.

Coordination

The ground controller was not aware of reduced spacing between the two wide bodied jets arriving on the ILS approach course. Tower procedures at the time of the mishap authorized ground controllers to clear traffic across an active runway without any coordination with the local controller. The Board maintained that the local controller should have told the ground controller about the sequencing problem even though it wasn't required. Had he done so, it's likely the ground controller would not have assumed he had sufficient room between arriving aircraft to clear the 727 across the active. Another clue to why the ground controller mistakenly cleared the 727 across the active lies in the radar display he observed at the time. The controller stated he saw a radar target about three and one-half miles on final but did not read the data tag that identifies the aircraft. At Chicago, this tag is dropped at two-miles and replaced with an asterisk as the aircraft continues toward the landing runway. NTSB members believe the ground controller anticipated observing the arriving 747 about four-miles out and accepted a more conspicuous target some five-miles out as that of the jumbo jet. Not noticing the asterisk closer in, he cleared the passenger liner across the runway, failing to realize the 747 was over the landing threshold.

Clearing

The 727's flight crew was cited as a part of the probable cause because they didn't adequately scan for landing aircraft. One dessenting Board member felt that because visibility conditions obscured the first 900 feet of the runway and a crossing clearance *was* issued, the 727 aircrew should have been completely exonerated. Despite this, the majority opinion of the Board was that although an air traffic control clearance is issued for taxiing purposes, it is the responsibility of the pilot to avoid collision with other aircraft. They maintained the 727 captain failed to clear his right-of-way, and while unable himself to adequately scan for landing aircraft, he should have told his first officer to look for traffic before entering the active runway. If he had done so, they concluded, the first officer could have seen the 747 and the accident would have been prevented.

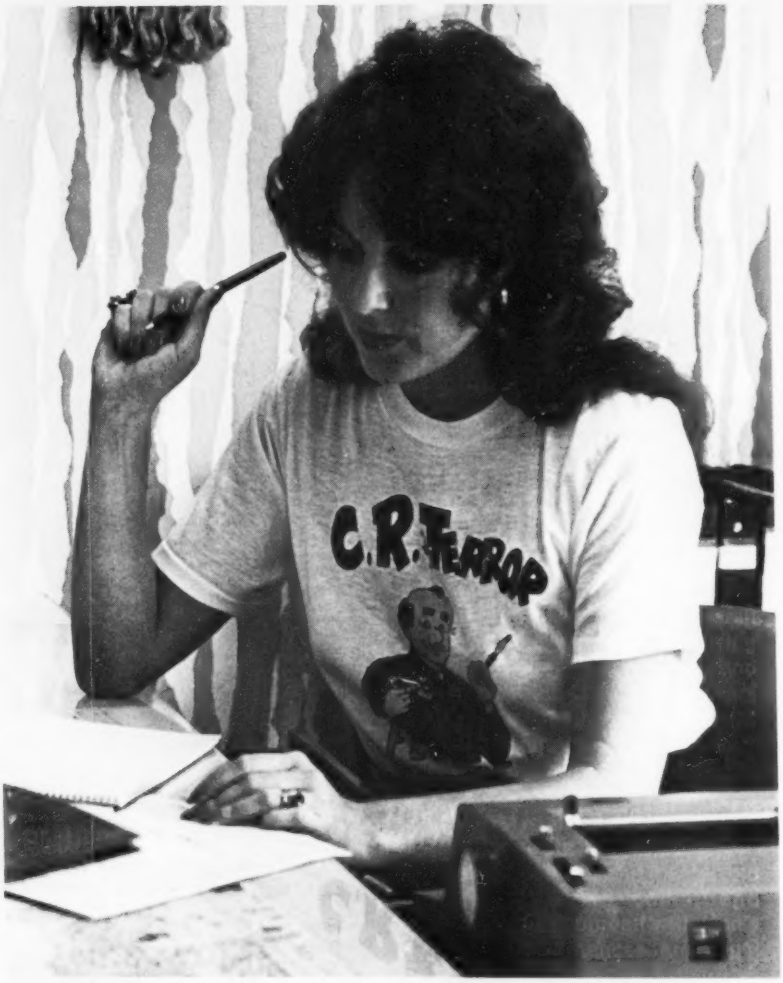
Whether or not there was sufficient visibility to see the oncoming airplane is beside the point we wish to emphasize here. The fact that the crew didn't actually look to see if the way was clear just prior to entering the runway contains an important lesson for all of us who fly. Is it possible the elaborate procedures and safeguards such as positive radar control, traffic sequencing, and the remarkably safe air traffic control system, can sometimes lull us into a false sense of security? Is it possible that our survival instincts can be dulled to the point where we may even blindly relinquish our vital interests to a marvelous but fallible system? In instances like this, the flightcrew must remain the ultimate back up system for possible breakdowns (human or otherwise) elsewhere. After all, who has more to gain by taking a healthy interest in their own survival—and more to lose if they don't?

A Familiar Face— A Familiar Pitch

Does the lady look familiar? Steady readers of *The MAC Flyer* will probably recognize the lovely whose countenance appears on the right as the same delightful damsel who drew your attention to the initial announcement of last year's writing contest. The response from would-be winners was so heartwarming we decided to bring her back to herald this year's competition.

Although it seems hard to believe, it is that time of year once again when a flyer's fancy should be turning to thoughts of putting a safety message down on paper and getting it in the mail before 31 March 1980. Right now that seems like a long time away, but before you know it Christmas and New Year's will zing by and the deadline will be upon us. So, don your fly-safe Mae West and take the literary plunge. Although you can express your safety savvy in prose, poetry, philosophy, drama, or whatever medium you feel most comfortable with stories of flight incidents (actual or imagined), or close shaves with disaster are especially well received. Last year's entries varied from one end of the literary spectrum to the other. Do try and hold yourself to between 1000 and 3000 words, which usually amounts to something like 6 to 14 double-spaced, typed pages.

Once your literary gem has been polished to perfection (or even near-perfection), submit it in two copies in a typed, double-spaced manuscript on 8 by 10½ inch paper. Identify the manuscript by title only, and attach a cover sheet telling us who you are, where you are assigned, what you do to justify your salary, etc.



Model: Sue Gallagher

Photographer: Maj. Bruce Gumble

For all practical purposes, anybody can enter, but *TMF* reserves the right to qualify entries for judging according to contest rules. Those who do qualify will receive a world-famous, full-color C.R. Terror T-shirt, so specify a size in your biography. Winners receive, in addition, engraved desk sets or wall plaques.

That's all there is to it folks. Get cracking and mail your entry to:

Flying Safety Writing Contest
HQ MAC/IGFE
Scott AFB IL 62225

Honorable Mention, 1979 Flying Safety Writing Contest

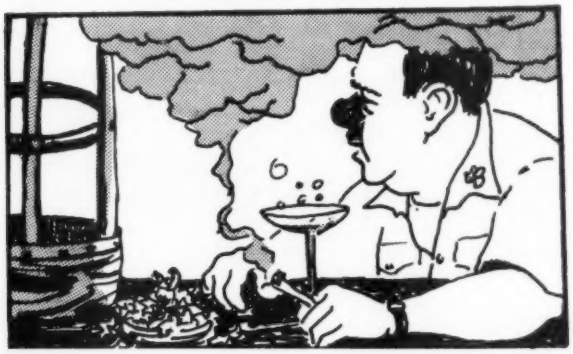
Why I Didn't Enter

by Capt Jerry M. Brewton
Det 2, 67 ARRS
Ramstein AB, Germany

FROM: 1 Lt B.O. Fireball, 1st Airlift Training Squadron
SUBJECT: The Safety Writing Contest
TO: *The MAC Flyer Staff*

1. I had planned to contribute an article acceptable for publication in your magazine. I've always admired Major Terror and I really wanted a T-shirt with his picture on it. However, my literary efforts have been totally uninspired, so I'm sending you this letter hoping that you'll have more T-shirts than entries. I'll tell you about some of my attempts at writing an article, and perhaps you'll decide that my good intentions merit a T-shirt. Something like getting an "A" for effort.

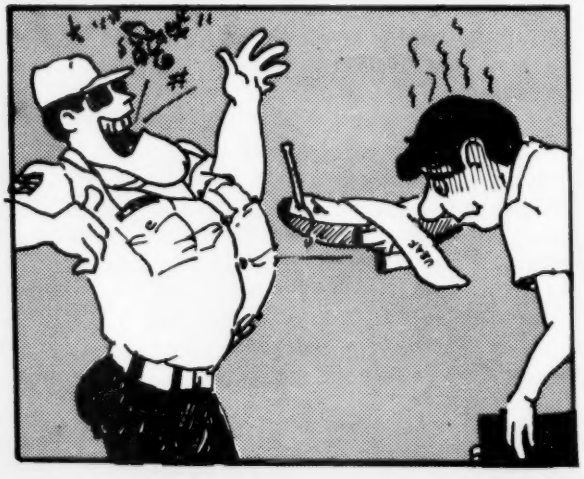
2. At first I thought I'd write about the physiology of flight. It's obviously an important area. Passing a flight physical is the first step toward becoming an aircrew member. We even have doctors who receive special training in aerospace medicine so they can attend to any medical problems we might have. We've all heard about the dangers of self medication. We know we should keep ourselves in good physical condition, and no one flies if he really feels bad. Even though everyone knows about flight physiology, I thought I could write something clever that would reinforce its importance. I brought this idea up to Maj Wheeze and he convinced me that such an article would not be worthy of publication. Maj Wheeze is our squadron CCO (Club Closing Officer). He smokes three packs a day, has a pitcher of martinis after work and a soft bulge where his waist should be. A flight of stairs leaves him breathless, and squadron rumor has it that his only nourishment comes from a cheeseburger lunch and the olives in his martinis. When I realized that Maj Wheeze saw no need for a physiology article I decided to get another opinion before ditching the idea. I consulted Capt Honks. He said he didn't think too much of the idea either since there was nothing wrong with a little Dristan or Contact if you have a cold and don't have time to get to the flight surgeon. After all, he pointed out, he'd been taking Contact for a week and it hadn't affected his judgment.



3. My next idea was to write something about the importance of aircrew training. Training leads to proficiency, confidence, crew coordination and safer operations. I had planned to discuss reducing aircraft accidents by being as cautious on our operational flights as we are when we are on a well planned training sortie. Capt Flash torpedoed that idea. When I told him what I had in mind, he said statistics show that many accidents occur on training missions. They happen in a controlled environment, with instructor pilots on board, and close to home base. He has a theory about this. He thinks crews sometimes become complacent on training flights—the repetition and familiarity with the area breed an unhealthy feeling of security. He promised to explain the theory in depth when he got back from his training flight. He was in a hurry, because it was 30 minutes before his takeoff time and he had to brief his crew and preflight the plane.

4. Flash's theory gave me another idea: maybe I could find some way to emphasize the importance of knowing the hazards in the local area. I studied our low-level-hazards map for inspiration. There was nothing there to help me. Every hazard for miles around was depicted on the chart. The safety officer had even marked a new radio tower north of the base. I didn't see how our local terrain could present any problems. All you had to do was check the map—there were no hills and, except for the new tower, no man-made obstructions.

5. Maintenance is an essential part of flying safety, so I decided to see if I could write about safety from a maintenance standpoint. I went down to the hangar to see if CMSgt Rigger could give me some help. I explained to him that I wasn't going to accuse maintenance of causing accidents; I just wanted some inputs on how maintenance could be improved to make flying safer. Chief Rigger was too busy to sit down and talk for long because he's been doing back-to-back phase inspections ever since two new squadrons arrived here. He did suggest that I emphasize aircrew responsibilities to maintenance. One of his pet peeves is pilots who don't make proper entries in the forms when writing up discrepancies. As Chief Rigger put it, "How can we fix the (expletive deleted) airplane if you don't tell us what the problem is and what you were doing when you encountered the problem?" He also suggested that I stress the importance of an aircrew preflight. I tried, but I simply couldn't think of anything to say about preflights. I've been flying for almost three years, and in all that time I've found only two grounding items on preflight. Now that's hardly material for a full length article. Don't you agree?



6. I was going to co-author an article on crew coordination. It fell through when my copilot, Lt Snooze, failed to write his part. I should have known that a guy who constantly forgets to tell me when we're at minimums on an ILS couldn't be trusted to write a few pages on teamwork.

7. In my search for a subject I talked to a lot of people here at the base. One of the most interesting ideas came from Maj John Wopwop who's assigned to the helicopter detachment. Maj Wopwop said that he'd be happy to teach me all about low-level-flying safety. When I asked to hear all about it he said, "Look out for other aircraft, never go IMC, and keep your tail rotor out of he trees." I told him that I could understand looking out for other aircraft, but I didn't have a tail rotor and I flew in IMC all the time. Wopwop explained that what he meant was never enter IMC unless you're on an IFR flight plan and always know how close you're flying to obstructions.

8. I think I could have written a winning article on low-level safety if I'd had the time. You see things have been pretty busy around here since the accidents. I'm sure that you've heard about them, and I'd like to say a little about their causes. They were really unavoidable and I'll tell you why.

a. First, I don't think that Maj Wheeze intentionally busted minimums and landed short of the runway. Lt Snooze was filling in for his copilot who was on leave. It was late afternoon and both of them were probably tired after six hours in the cockpit. I know that the accident board found that copilot duties had not been briefed and that neither pilot had gotten much sleep at Partytown the night before, but I'm sure that the short landing was just what Maj Wheeze figures—the result of a severe windshear.

b. And about Capt Flash's gear collapsing. Well, I think that he did a heck of a job just getting on the runway with Maj Wheeze's aircraft blocking the approach end. Flash had to land—he was down to emergency fuel. And everybody in the squadron knew that that aircraft had a malfunction in the gear warning system. Some people think that Flash would have found the missing bolt on the main gear if he'd done a thorough preflight. But the maintenance preflight had been signed off and the aircraft had been flown that morning, so you can't fault Flash for only doing a quick walk around.

c. Capt Honks was just a victim of circumstances—it could happen to anyone. He was landing on the parallel runway and he mistook the crash truck lights around Flash's aircraft for the approach lights. Naturally he landed long, and with the wet runway and everything, he just couldn't stop. I don't think that the sinus medicine he was taking had any effect on his visual perception.

9. Since the accidents I haven't had time to write a safety article. We've got a new squadron commander, Col N.O. Hazards, and he's initiated a very intensive flying safety program. Most of us have to attend flying safety meetings every morning. The show time for our training flights is now two-and-one-half hours before takeoff. Then there's usually at least a two-hour debrief after every flight. Chief Rigger is teaching a preflight class—mandatory for all pilots. I've been to it the last three Saturdays—he's not content that we know where everything is, he expects us to know what each part does! The requalification course for aircraft commander is pretty tough too. I don't know how I managed to wind up in the same program as Maj Wheeze and Captains Flash and Honks. I did have the good sense not to try to land with three wrecked aircraft on the runway. When I came back around I could see that surface visibility was deteriorating. I remembered what Maj Wopwop told me and called for an IFR clearance. When I hit the fog bank at the DH I went missed approach just like I'd done a hundred times before. That new tower wasn't even on my approach plate. The guy wire just barely grazed my wingtip—a healthy birdstrike would have done more damage. I suppose I was lucky—a few feet to the right and the wire would have cut my plane in half.

10. Next year I'll try to get an early start on writing an article for your magazine. Col Hazards suggested that I plan to write on professional aircrew responsibilities. I told him I wasn't sure I could write an article on that, but he assured me I'll be an expert on the subject by this time next year. Don't forget me. I wear a large T-shirt and I sure would like to have one.
B.O. Fireball, 1 Lt, USAF
1st ATS

(AUTHOR'S NOTE: If there is a 1 Lt B.O. Fireball anywhere in the USAF, you have my apologies—I was not trying to slander your good name. The same is true for the First Airlift Training Squadron. The fact that Fireball, Wheeze, Flash, and Honks all survived their mistakes is no accident. There's no point in killing off fictional characters. We have to view the rash of accidents as pure fantasy, don't we? No one really lands short, or long, or with the gear up, and no one flies into an obstruction. Since no one makes mistakes like these, we can all relax—the men of the 1st ATS were all relaxed and they survived. Of course we should remember that if we allow ourselves to get into the same situations as they did we're not going to have a kind-hearted story teller to protect us.)

ABOUT THE AUTHOR

A native of Texas, Capt Brewton graduated from the University of Houston in 1970 with a B.A. in political science. He entered OTS the same year and completed helicopter pilot training in 1971. After a tour in Thailand flying HH-43s, he was assigned to UH-1Fs and HH-1Hs at Little Rock AFB. In 1976, Capt Brewton took advantage of the Palace Furlough program. While away from the Air Force he worked as an offshore helicopter pilot and an electrician. He returned to active duty in March of 1979 and was assigned to the Rescue Detachment at Ramstein AB, Germany.

Flight Lines

KISS

Having read your August 79 "Mishap with a Moral" ("How Slow Can You Go?"), I can't help but feel the "old head" you were referring to was doing exactly what the Dash One then in existence called for. While good judgment coupled with plenty of hangar flying should have dictated immediately feathering #2 prop and making an emergency landing, the A/C in fact followed existing procedure (bear in mind that the initial situation arose during an approach, *not* during a takeoff). As a result of this accident, the old rule was changed to compensate for those of us too inclined to follow strict procedure and not be swayed by good judgment (CYA). This is an expensive way to change procedures.

Comparing our C-130 Dash One with the (FAA approved) B-727 flight handbook I use for a commercial airline, I sincerely doubt the C-130 T.O. would gain FAA approval. In any case, it violates the time-proven "keep it simple stupid" approach to safe flying, as well as Murphy's first law. T.O.1C-130B-1 needs to be published by model, and all emergency procedures should be simplified in the same manner as "Bold Face Procedures" presently employed. Until this has been done, we'll continue to need arm-chair quarterbacks.

Capt Bill Emmer
924 TAG (USAFR)
Kansas City, Missouri

Coast Guard Folks are Americans Too

I have long been an avid reader of your fine publication and I commend you for your consistently high standards of journalism. *The MAC Flyer* is not only informative and educational, but inspires professionalism as well.

While reading my August, 1979, issue, however, I noted an oversight which prompted this letter. The After Deadlines article, "Americans Take Top Awards at Hercules Tattoo" failed to mention that a U.S. Coast Guard C-130 from Air Station Kodiak, Alaska, won the Graviner's Spirit of the Meet Trophy, awarded to the crew making the most outstanding contribution to the success of the competition. Needless to say, we are all very proud of them and were sorry to see their name omitted.

T. T. Matteson, Captain
U.S. Coast Guard
Washington, D.C.

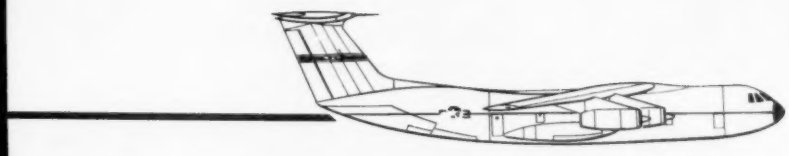
★ Your pride is certainly justified and your point is well taken on our omission, Captain Matteson. Although we are *The MAC Flyer*, and purposely listed only those units in our command that had garnered recognition at the Tattoo, we erred when we used "Americans" in the title and didn't mention all the U.S. units which had distinguished themselves.

He Was There!

With reference to the Quick Stoppers on page 23 of the March, 1979 issue of *The MAC Flyer,* the article, "Hot Seat," was in error as to the type of aircraft involved. The incident involved a C-130H, not a C-141A. I am the loadmaster involved! The rest of the article appears accurate.

John Rodriguez, SRA
772 TAS
Dyess AFB, Texas

★ Sometimes we change ingredients around a bit in *TMF* stories and articles in order to protect the guilty, respect the privacy of the innocent, or to enhance or highlight the point we are trying to make. In this case, however, we simply made a mistake in our reference to the aircraft. Your quick action in putting out a cargo fire on board your Hercules, thereby preventing damage to the aircraft and possible injury to other crewmembers and passengers, deserves recognition. Therefore, a tip of the *TMF* flight cap goes to you, Airman Rodriguez, for your heroic actions and your hawk-eyed spotting of our goof.



Texas Towers

I read your article about the CH-3B's in the centerfold of the August MAC Flyer. There is one error; the CH-3B's did indeed transport people and equipment out to the Texas Towers, but not in the Gulf of Mexico! The CH-3B's were stationed at Otis AFB, Massachusetts, and replaced the aging H-21B's. Prior to becoming CH-3B's, the aircraft were called HSS-2's, the same aircraft the Navy uses for sub hunting. The remainder of the article was well written and up to date and we do enjoy the Flyer every month.

TSgt Bevon R. Dowell
343 TFG Quality Control
Elmendorf AFB, Alaska

★ Wonder why they didn't call 'em the Massachusetts Towers? We stand corrected, Sarge.

Wrong Place, Wrong Time

Reference your Quick Stopper column in the August, 1979, *Flyer,* I must agree that our AAVS photographer was in the wrong place at the wrong time when he was run over by the 747. However, you neglected to mention what is an extremely important lesson to be learned from this preventable taxi accident. The key point is that the combined towing crew of civilian specialists and military observers wasn't coordinated, and that lack of coordination greatly assisted in the unfortunate result. Fortunately, our photographer is recovering.

John B. Kerr, Jr, Colonel
HQ AAVS
Norton AFB, California

★ Glad to hear that your fotog is on the mend, Colonel, but we'll still stick by our original premise, which is that the lensman should have been more careful of his personal safety. None of the message traffic we saw indicated there was any fault on the part of the towing crew, or that it was "uncoordinated."

Where There's Smoke . . .

In reference to your response to Capt Hugh Jardon's letter in the August, 1979, issue of *TMF,* we would submit that you are in total error. The bright spot on the windshield is a NESA panel fire—a common problem on the "Boeing Racer." The reason that we are so positive *TMF* is in error is because no Rescue HC-97G crewmember would have made such a grave tactical error. To depart TDY with your wedding band on would have been a major deviation from crew discipline.

R. E. Calcitrant, Major
305 ARRS (AFRES)
Selfridge ANG Base, Michigan
P.S. The nose gear is still cocked.

★ If you're serious, Major, you've got to be kidding. Let's call a spade a shovel and let the chips fall where they will . . . and not try to cover up a major deviation from crew discipline with a transparent smokescreen like a NESA panel fire. It might be a good idea to point out that while this errant crew lost points with the safety folks, they scored big with their wives, who had been laboring under the misconception that their aircrewmember spouses were shedding their wedding bands on trips.
P.S. The angle of the nosewheel dangle is "irreverent."

For those who wonder what all this nonsense of nosewheels and NESA panels is all about, it started with a reader's tongue-in-cheek letter about our June, 1979, cover, which was a reproduction of the first *MATS Flyer* cover. Although it clearly showed a C-97 landing with the right main gear up (see above), various outlandish explanations of what was wrong have been suggested by readers and *TMF* editors in an ongoing battle of half-wits.—Ed.

THE CO

AN-12 CUB

Built as a medium-range cargo version of the AN-10, the Antonov AN-12 "Cub" measures 108 feet long, three feet shorter than its passenger carrying cousin. It entered Soviet service in 1959 and is decorated with either the standard Soviet Air Force or Aeroflot insignia. The Cub is comparable to our Lockheed C-130 and, like the Hercules, has been introduced in many other countries. You might see an AN-12 with the national markings of India, Egypt, Cuba, Algeria, Indonesia or any of several other countries. The aft cargo door can be opened in flight for airdrop operations, and some of the military versions sport a twin 23mm tail gun.

It's powered by four Ivchenko engines, each developing 4,000 hp a together of pulling the Cub along at a mph at 25,000 feet. With a landing r feet at its normal takeoff weight pounds, the AN-12 also has very cre field capabilities.

For operations in arctic areas and fri winters, Aeroflot's polar aviation s installed specially developed skis on 12s. They are pontoon shaped and braking devices and special struts pitching and rolling on snow and ice.

C-130 loadmasters might be in comparing the Cub's cargo co dimensions with that of the Herk. Its feet 3½ inches, max height is 7 f ches with a max width of 9 feet 10 i AN-12's normal crew complement is

MPETITION

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t is five, with

room for 14 space-A passengers in addition to the freight.

We hope this glimpse at "Ivan's Airlift" will spark some interest in the competition and help make us all more aware of our "counterparts" over there who are working very hard to enhance their airlift capability—with all that that implies.

Risk Awareness or Blind Faith

by Gerald M. Bruggink
Bureau of Accident Investigation
National Transportation Safety Board

Are we losing the ability to sense when "the system's" protective mantle no longer covers us?

In May, 1952, the U.S. President's Airport Commission, chaired by James H. Doolittle, defined calculated risk as "a willingness to embark deliberately on a course of action which offers prospective rewards outweighing its estimated dangers." There can be no doubt that this definition reflected the attitude of pilots like Doolittle who contributed so much to the development of aviation into a public transportation system. However, when we look at some of the accidents in recent years, it appears that the art of risk-taking is slowly becoming a lost art. That is the only conclusion one can draw from mishaps that could have been prevented by using only a modest degree of skepticism in estimating the danger of a particular course of action or inaction.

Our affliction could be the ironic consequence of operating in a system that achieved a high degree of reliability by reducing dependence on individual decision-making—including risk assessment—through a proliferation of managerial controls, regulations, and computer inputs. Actually, in the process of eliminating some of the traditional human factors problems, we may have created a new one: the inability to sense when "the system's" protective mantle no longer covers us. The safety publication of a major U.S. carrier identified a similar problem when it referred to a "highly structured operational environment which invites follow-the-leader complacency and discourages departure from routine." We can go one step further and make the blunt observation that we operate in a climate that is more conducive to the development of blind faith than risk awareness.

The Accident Record

Elements of inadequate risk perception can be found in almost every accident and at all

levels of the aviation industry. Unfortunately, that stage-setting aspect of an accident sequence is seldom discussed in unambiguous terms in accident reports because the underlying reasons may be too elusive or too embarrassing for analytical treatment. This frustrating limitation of our accident investigations is eloquently summarized in the introduction to a NASA study dealing with human factors in aircraft operations. After referring to our lack of understanding of the error mechanism involving well-trained professionals at critical points in flight, the authors state: "Neither do we understand, except in isolated cases, the factors which may be responsible for (the crew's) failure to recognize and react to presumably clear warnings, or to intervene under circumstances which seem to clearly require such intervention.

The universality of this problem can best be illustrated by briefly reviewing the risk-management aspects of some recent accidents. This treatment of these accidents is used for accident prevention purposes only; there is no intent to imply culpability or to question the official cause determination of these accidents.

Operators

About four years ago, a jet transport collided with rising terrain as the aircraft descended below safe altitude due to the crew's incorrect identification of their position with regard to the airport. There were no survivors. The investigative authority attributed the premature descent to "dependence on Doppler and weather radar systems on board the aircraft which left room for misinterpretation."

This was the only aircraft in the operator's fleet with off-standard cockpit instrumentation. The Doppler computer indicator and the computer system were not of the same make. As a result, only the 100-miles indication on the distance-to-go presentation was correct; the positions of the ten and one miles indicator disks were "more or less arbitrary." The operations manual had the following remark under the illustration of the computer indicator: "Distance-to-go not Active." The investigative authority was of the opinion that it would have been more appropriate to mask this indicator "so that the chances of crew misinterpretation would have been completely eliminated." That the crew relied on the distance-to-go counter was strongly suggested by their reports of being "one-three-zero miles out" and "one-four miles out." The aircraft struck a mountain 40 miles from the airport, at 4,300 feet MSL.

The weather radar system was also off-standard in that the range markings differed from those used in the operator's other aircraft. This difference was not explained in the operations manual. The investigative authority concluded that the crew could have received misleading information if they were

using the terrain mapping features of the weather radar to cross check their position with regard to the airport (located near a coastline).

What does this case have to do with risk awareness? The answer to this question is governed by our understanding of one of the fundamental concepts in accident prevention: always try to make it easier for the other person—and ourselves—not to make an error. This requires imagination and awareness of what goes on in the "dark side" of human behavior. We are creatures of habit with a built-in tendency to rely on what seems to conform with past experience. Therefore, the assumption that a cautionary note about a non-standard piece of equipment will protect a crew from reverting to ingrained habits in a high workload situation must be viewed with suspicion.

Air Traffic Control

"What are the consequences if my assumption is false?"

In November, 1975, two wide-bodied jets were on the same jet route and approaching each other head-on, at night, at a closing speed of 863 knots; one was maintaining flight level 350, the other was climbing through FL 350 to FL 370. The radar controller, who had full data blocks available, realized that a potential conflict existed but expected that the climbing aircraft would reach FL 370 before passing the other flight. According to the official accident report he "assumed that, by keeping an eye on the situation, he would be able to take timely steps if the anticipated separation did not materialize."

When this controller relied on automation technology rather than on positive steps to insure separation, the safety of the 306 persons aboard the two flights was governed solely by his continuing awareness of the developments on his radar scope. This presumed safeguard failed when he allowed secondary duties to interfere with his observation of the clearly displayed conflict.

A last-second warning from another controller, the alertness of the captain of the climbing aircraft, and his vigorous evasive maneuver kept the aircraft separated by no more than 100 feet. This case is a classic illustration of one of the cardinal sins in aviation: Uncritical acceptance of unjustifiable assumptions. This is the type of assumption that can easily be avoided by a slight exercise of the imagination in the form of a question: "What are the consequences if my assumption is false?"

Crew

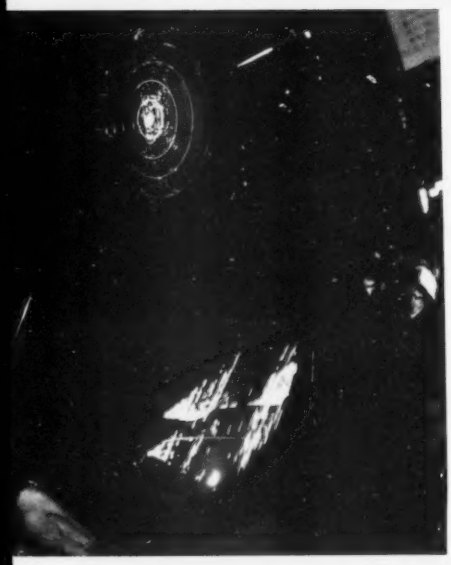
About five years ago, a jet transport struck mountainous terrain while the crew was executing a letdown procedure as part of the NDB approach to a sea-level airport, located on an island. The accident occurred at night; all occupants died.

The investigative authority determined that the crew started the letdown when one of the ADF needles in the cockpit swung while the other remained steady; based on a reconstruction of the flight track, this needle swing occurred while the flight was still about 30 miles from the NDB (located on the airport). The crew reported that they were over the station and clearance for letdown was given. Due to the displacement of the descent pattern, the letdown was made over the mountainous island instead of over open water. The aircraft flew into rising terrain at 3,000 feet MSL.

Although the accident report does not provide enough information to evaluate the crew's response to the single ADF needle swing, it appears that this accident was caused by the acceptance of doubtful position information. Since the topography of the situation should have made it obvious that a letdown started before reaching the station carried an unacceptable risk, the crew should at least have waited for verification from the second ADF. Furthermore, an operating VOR was located 6 miles from the station. There are no indications that the crew made an attempt to use this additional navaid.

This controlled-flight-into-terrain accident was one of three, in the same year, that destroyed three jet transports and killed 390 persons on mountain slopes in the vicinity of destination airports. One would expect that descents and initial approaches that leave no margin whatsoever for navigational or procedural errors would prompt the crew to react protectively to the first doubt about their position.

The representative examples



in each of these categories should be sufficient to support the premise that our risk-taking behavior occasionally shows serious flaws. Those who are not yet convinced of this should take a hard and objective look at the international accident experience, including some of aviation's worst disasters so far.

This apparent weakness in the recognition and handling of risks probably finds its origin in a misunderstanding about the role of trust in any transportation system. No society can have mobility without a certain level of trust, that is, the conviction that a particular person or thing will perform as promised. This trust must have a sound foundation; it cannot be equated with hope or blind faith. There is no such thing as trusting that a badly-worn tire will sustain another 100 miles of high-speed driving; this is not a calculated risk but one of the lowest forms of gambling.

Although there are some notorious exceptions, proven high-risk situations are generally treated with the respect they deserve at the individual, as well as the administrative and corporate level. For instance, no pilot in his right mind would attempt an approach into Hong Kong with weather at minimums unless he has complete trust in his aircraft, his instruments, the navaids, his own competence, and his crew. As long as this trust is not contaminated by self-serving considerations we are dealing with an acceptable calculated risk.

Between the desirable and undesirable extremes of decision-making—calculated risk and blind assumption—lies a transition zone in which our proximity to either extreme is governed by the quality of our trust. With regard to this intangible index of the probability of success of our endeavors, it should be noted that there is nothing absolute about it; trust can only be measured in terms of its justifiability. To put it differently, nobody can give 100 percent assurance that a particular flight will be accident-free. We can only bend the odds in favor of safety. Such a conscious attempt to justify our trust differentiates the calculated risk from the mindless assumption.

Some of the factors that predispose towards the taking of risks that have no basis in trust have familiar names:

- Economical or reputational considerations
- The pressure of schedules or duty time limitations
- Fatigue, be it self-induced, system-induced, or the result of uncontrollable circumstances
- Reluctance to divert, or to go-around, for a variety of reasons
- A cockpit atmosphere that discourages unsolicited expression of doubt or concern.

These factors have been identified repeatedly in accident reports. However, the pertinent findings never seem to have reached those for whom the bell tolls next. Apparently, there is a small number of persons, in all segments of aviation, who remain blissfully ignorant of the risk they take, or impose on others, because they believe that years of uneventful routine operations do away with the need to listen to woeful tales. This false sense of security is the biggest obstacle in our attempts to exploit what is bad in aviation to make what is good about it better.

Occasionally, one hears talk about aviation's "incredible safety record." The really incredible part about it is that we get away with so much uncalled-for risk-taking. The few accidents that still occur suggest that most of them involve an underdeveloped, or temporarily inactive, triggering mechanism for the timely perception of risk at the individual, managerial, or regulatory level.

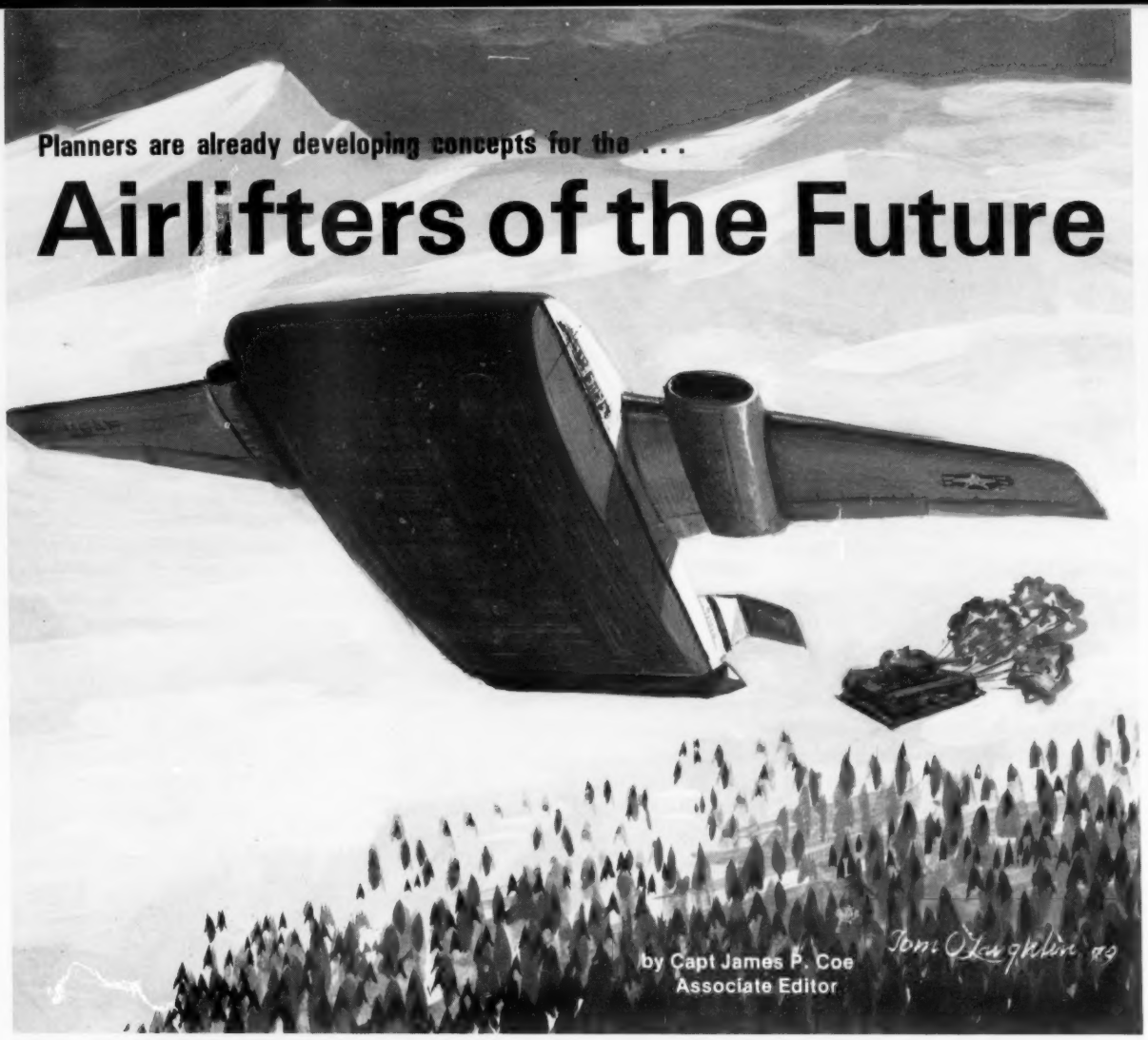
One has to conclude that the haze of invulnerability through which too many approach a career in aviation can best be dispersed by discussing the facts of life—and death—in aviation in unadulterated terms. That means we need a merciless communications system that deprives every principal in our deceptively safe environment of the excuse to proceed on blind assumptions.

About 300 hundred years ago, when his troops were about to cross a river, Cromwell told them: "Trust the Lord, but keep your powder dry." In aviation we need a similar message after each takeoff clearance: "Trust the system, but keep your options open."

—Adapted from PanAm *Crosscheck*

Planners are already developing concepts for the . . .

Airlifters of the Future



by Capt James P. Coe
Associate Editor

Requirements for cost effectiveness are not retarding innovation.

Last December (1978) we celebrated the Starlifter's fifteenth anniversary and predicted that the C-141B "Stretch Starlifter" would be with us for several decades to come. The ten-year-old C-5 is starting into a wing modification program that will extend its service life by about 30,000 hours. So things are looking pretty good for the near future of strategic airlift—at least into the 1990s. However, the long lead time needed to get new aircraft makes us ask, "What then?" MAC planners have worked for seven years on answers to that question through the C-XX program, their designation for a turn-of-the-century aircraft.

The most striking concept of the C-XX program is RAMPART (Route to Airlift Mobility through Partnership). MAC is proposing that future large airlifters must be the product of combined efforts from both military and civilian sectors of society. "We are talking about a single aircraft that will be used for both passenger service and freight," says MAC's Assistant Deputy Chief of Staff for Plans, Mr. John Shea.

Planners forecast that commonality between the military and civil airlifters will be the key to success. If the airplanes produced for each user have a great deal in common, they will cost less. Such efforts have been nonexistent up until now, except when the Air Force has taken an off-the-shelf commercial airliner and adapted it for military service like the DC-9 to C-9 conversion.

Taking a realistic viewpoint, the airplanes must differ some, but commonality leads to affordability.

In planning for contingencies, we never seem to have enough airlift. We still need to improve our nation's ability to move people and cargo in a crisis. However, we must also consider our national resources and make future airlifters useful to the entire aviation community. Again quoting Mr. Shea, "It seems shameful that this country would pay from 50 to 70-million dollars for an airlifter that is usable in the commercial sector and not capable of meeting defense needs during a national crisis." Mr. Shea is talking about more than an extension of the Civil Reserve Air Fleet (CRAF). He is looking for a basically commercial aircraft that can also meet our *national* need for airlift.

Primary factors influencing the design of a new aircraft are energy, environment and productivity. We can't say for sure what an ideal new airlifter might look like but we know it will have to employ new technology to do more work at a lower cost. Planners estimate that aircraft performance can be improved 20 to 40 percent by adopting new technology that we know about today—fly by wire, composite materials, more efficient engines. It's time to consider how we'll use these capabilities to enhance our place in the world aviation community.

An obvious reason for developing new airplanes is because the old ones wear out. Airlines plan on their aircraft lasting about 20 years, but normally try to replace them as they reach 14 to 15 years of service. The cost of replacement aircraft is estimated at 65-billion dollars between now and 1985. This is a high price that the civil airlines may not be able to afford by themselves. On the military side, we are flying aircraft based on 1950s and 60s technology. The cost of developing a purely military transport is estimated at 2.5 to 4-billion dollars, plus 43-billion (1976 dollars) more to buy and operate a fleet of 200 new airlifters for 15 years. With the current trend of shrinking defense dollars, it's important that we find ways to cut this cost so we can afford to meet our future defense commitments.

Another consideration is our nation's place in the world air transportation market. Mr. Shea contends, "Not so long ago, the United States operated more than 80 percent of the airlift across the North Atlantic. Today we operate approximately 40 percent. We are losing our position . . . because the allowance of foreign carriers to enter our markets released the advantages we once had in the air transportation market.

"Fortunately, much of the international traffic is carried in United States-manufactured airframes, but it is unfortunate that the owners of those airframes, for the most part, are not American. We should be worried that . . . the foreign manufactured A-300 (Airbus) is coming into our domestic picture. Serious inroads are being made, eroding our position as the world's leader in aviation."

"Serious inroads are being made, eroding our position as the world's leader in aviation."

With both the cost and need for airlift rising, the important question is, "How can we meet the challenge?" Ideally MAC planners would like to see an airplane that can carry passengers in peacetime and move war material during emergencies. The American research and development community should be able to come up with a design to do the job since NASA and some manufacturers are already working on the problem. For the first time, MAC is asking that the military's needs be reconciled with the commercial airline's requirements in new aircraft design features. Airplanes on the future assembly line destined for military use would, however, get some modifications unique to our operating environment. For instance, only the military versions would have an airdrop capability. But both airplanes would have common fuselage features and thousands of parts could be interchangeable, thus reducing cost. The military style RAMPART aircraft might have roll-on/roll-off capability and a strengthened floor to carry loads like today's C-5 can handle. On the other hand, the airline model could do things that today's wide-body airplanes can't do—like moving very large, heavy military equipment.

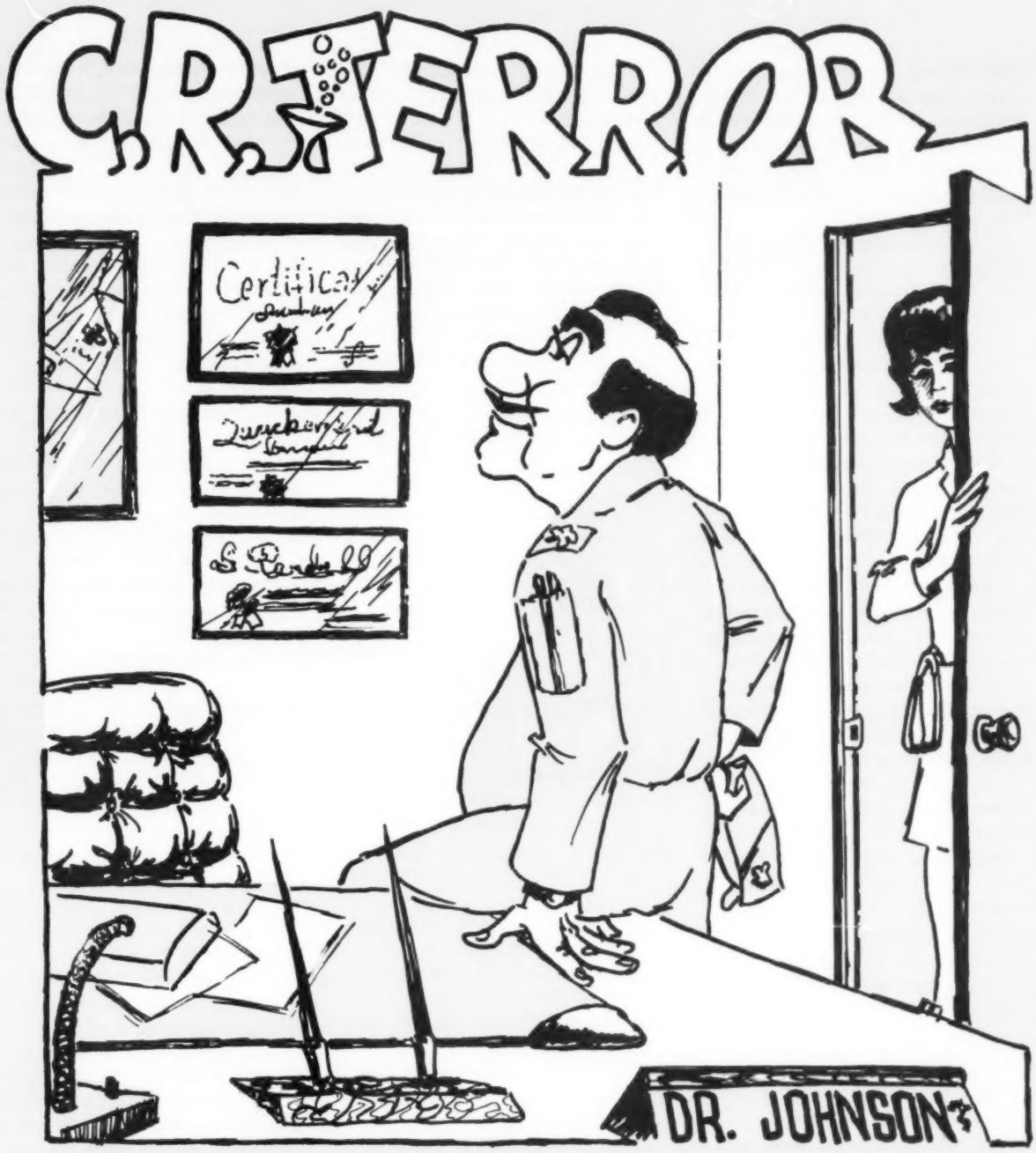
Along with some aircraft manufacturers, MAC planners think the future airlifters should be a

family of aircraft covering the entire spectrum of air transport needs. The largest version would be equipped for transoceanic passenger and cargo hauling—this model being the replacement for our current strategic airlifters. Another modification might produce an aircraft with a 120,000- to 150,000-pound payload for the domestic market, and a smaller STOL version could handle feeder routes with additional application to tactical airlift. Using the family concept, the total market for airlift, military and civilian, could be satisfied.

If you want to know what we are really going to be flying come the year 2000, the best answer so far is that it will probably be somewhat similar to current airplanes. In general you might expect to see an aircraft in the 150 to 200-ton payload category but 600-ton payload carriers are also under consideration. Up front in the airplane you can expect to find the latest in avionics. Economy is the driving factor, however, and innovative cockpit goodies will probably have to justify themselves through increased productivity and safety. Cargo handling equipment will include improved versions of today's best and again the type will largely be determined by the needs of the civilian aircraft buyers.

Promoting commonality of airlift equipment to satisfy both government and private enterprise needs is pretty much a new idea. In fact, the concept of representatives from the major airlines, aerospace industry and an alphabetical amalgam of federal agencies from DOD to OMB sitting down to design a new airplane may be hard to imagine. Mr. Shea believes that, "The final determinant will be the President of the United States. He will give it national direction and purpose. With his support and that of the Congress, the enhanced partnership between the civil and military can become a reality." Used to full advantage the RAMPART program should lead to a safe and productive long-range airlifter for the 21st Century.

Commonality leads to affordability



The Rotund One submits himself to the most revealing flight physical of his career.

Major Terror, room three," crackled the speaker in the flight surgeon's waiting room. C.R. rose slowly and trudged apprehensively down the hall. Reaching the third door on the left, he found the office brightly lit, but unoccupied. "Might as well go in and wait for my annual encounter of the most unpleasant kind," he mumbled. The Field Grade Fumbler meandered slowly across the office and began perusing the diplomas prominently displayed on the wall.

"Good afternoon, Major Terror." The voice from the doorway startled the corpulent command pilot and the greeting was punctuated by the click of the room's door latch. "You may go ahead and strip down to your shorts and socks," added the unexpected and very feminine voice.

C.R. turned to face a well-

assembled woman wearing a white smock over an Air Force uniform. "If it's all the same to you, nurse, I'll wait for the doc," replied the Slightly Shy Skipper.

"I *am* the doc," the lady major replied impatiently.

C.R. blanched, "What happened to Doc Whippit? He gives me my physical every year. You're ah . . . a woman!"

"Observant of you to notice," replied the female physician. "Doctor Whippit is on leave. I'm Doctor Johnson. Now let's get on with the examination."

C.R.'s neck reddened as he unzipped his flight suit. "It's just that I never expected to find ah—I mean I didn't know the Air Force had any—"

"Women flight surgeons? There are a few of us. Now don't be modest, Major Terror, your reputation has preceded you. Just pretend you're in a massage parlor." Doctor Johnson referred to the clipboard in her hand as the Paunchus Pilot hung his custom-made flugenzuit on the hook behind the office door. "Your lab results look pretty good for a man of your age. Cholesterol's within limits, EKG was okay, eye and hearing tests are acceptable, and blood and urine tests are normal. Only one small problem—"

"Yeah, I'm dying of acute embarrassment."

"No. Your triglycerides are slightly elevated."

"I'm not surprised, this isn't my idea of a place to undress before a strange woman—my what?"

"Tryglycerides. I'll give you a pamphlet telling all about them. You may have to cut down on the lunchtime martinis."

"That shouldn't be hard, I do all my drinking after five," fibbed the Bibulous Buffoon.

"Sure," affirmed the lady fly doc with more than a hint of skepticism. "Sit on the examining table and we'll listen to your chest." She plugged in her stethoscope and advanced on the Rotund One's body. C.R. followed orders, coughing and breathing on command as the doctor examined his upper torso. "You smoke?"

"Yes. Why not?"

"You know what the Surgeon General says about smoking, it's dangerous to your health. Also cuts down on your performance as a pilot, and in other areas of physical activity."

"If you doctors don't like smoking, then I believe you shouldn't. It's one of my few vices, doc."

"Humph," she groaned. "Lower your shorts."

"Beg your pardon?"

"Your shorts. And your socks. We'll take a look at your feet while we're at it."

"My socks, okay. My shorts, never!" protested the Flatulent Flyboy.

"Okay. You've established your modesty. Now please lower your shorts so we can get this over with. I've got seven more physicals to do today," commanded the feminine flyer checker as she drummed her fingers on the examining table.

"Madam, I am a very senior major. This is disgraceful. What's *your* date of rank?" blustered the Pompous Pilot.

"Yesterday. Look, Major Terror, I don't personally care whether or not you pass your flight physical. In fact, some say I would be doing the entire aviation community a favor if I flunked you."

"Okay, okay," the Portly Pilot yielded.

"I certainly can't see any reason for your excessive shyness," observed the fly doc wryly. "What's the scar on your lower abdomen?"

"Old war wound. Got it in the big one," answered C.R.—neglecting to explain that he had generated a hernia while trying to single-handedly lift a "one-time good deal" German grandfather clock into his C-47.

"Does it ever bother you."

"Only when I pole-vault. Now let's get on with this."

She acknowledged by thrusting out two fingers. "Turn your head and cough."

"How mortifying," complained the Bandy-legged Green Bagger.

"Come on, Major, you've had physicals at least 25 times before.

"Not like this," observed C.R. "Mostly they were done by baby-faced, captain-type flight surgeons who didn't look old enough to be out of med school. Occasionally I've encountered the professional Air Force doctor who shares many of my views on life, and usually I can talk him into sparing me such indignities as you have performed on my body. But absolutely never have I been short-armed by an attractive brunette in doctor's clothing."

"I am still the doctor and you the patient. And I really believe you are a sexist," emphasized Doctor Johnson. "Bend over please."

With all the checks thoroughly accomplished and a cold sweat on the Pudgy Pilot's brow, the lady examiner announced, "You may now get dressed."

"It's about time," complained C.R.

"Major Terror, for a man of your age, you're in pretty good condition," pronounced the apostle of Hippocrates.

Zipping up his green bag, C.R. asked, "Would you kindly quit saying 'for a man of my age.' There are a lot of fine flying and funning hours left in this frame," contended the Lothario of Airlift.

"Sorry about that, but you'll be happy to know you've passed your physical. I'll have base ops publish a notam warning everybody that you're cleared to 'kick tires and light fires' for another year," announced the distaff doc.

"Where'd you pick up the flying jargon?"

"I'm a pilot. Fly with the base aero club when time permits. Rent a Citabria every now and then."

"You don't say."

"Yep. Is there something wrong with that?"

"No. I should have expected it," admitted C.R. pulling on his patent leather flying boots.

"I can tell by the look on your face that it rubs against the grain. A young woman being a doctor—and a pilot. Your male ego has been damaged by the very thought of a woman getting a little nibble of the action that you men have supposedly reserved for yourselves."

The Rotund One retorted, "You've damaged more than my ego. Can we get this over with?"

"I'm sorry. I get carried away. Shall we call a truce?"

"Okay," agreed the Magnificent Major.

"I'll even sign off your FAA Medical Certificate if you'll do something for me. It will help your problem with the triglycerides and retard your tummy's affinity for your socktops."

"Lay it on me, madam."

"There are lots of fad diets —forget them. I'll give you the good ol' Doc Johnson simple, never-fail method of weight control. Ready?"

"Shoot Doc."

"Step one. Throw away all the spoons in the house. This automatically eliminates things like sugar, ice cream, gravy, and other enemies of the trim torso."

"Copy that," winced the Ambient Aeronaut.

"Step two is take it easy on the booze. Don't use olives in your ah . . ."

"Terrorific Tinis," inserted C.R.

"Whatever you call them. Use an onion. That alone will help bring your waistline within normal limits."

"I can live with that," speculated C.R.

"Step three is to get a book of calorie equivalents, and based on the total number of calories you need, restrict your food intake. This should be done in three reasonably proportioned meals each day. You're a transport pilot, so your flying job is fairly sedentary, right?"

"Yea, and we sit in the cockpit a lot too," affirmed the Ace of Aerospace.

"Then use the charts I'm giving you. They tell you how many calories you should have."

"I guess it couldn't hurt," C.R. smiled weakly.

"And finally. Get a set of scales and a full-length mirror. Put the scales in front of the mirror and weigh yourself wearing only your sexy pink skin every day. That should improve your will power."

C.R. nodded, "Not a bad idea."

"Well, that about does it except for jogging."

"Arrgg," groaned C.R.

"Look, I know it's tough to get started, but it will make you live longer, look better, and improve your stamina for flying and other activities. Can I ask you a personal question?"

C.R. blushed, "Why not?"

"You're one of the world's greatest pilots, but can you do two snap rolls out of an Immelmann?"

"Why . . . er . . . ah," stammered the Straight-and-Level Skipper.

"I can, Major, and I'll be glad to show you how some Saturday if you wish."

"I think I'd like that a lot." The Fabulous Flyer signed his Form 1042 and stood up to leave. Turning to the doctor he said, "You've taken great liberties with my body. Don't you think it's time I knew your first name?"

The feminine flight surgeon flashed a broad smile, "Fredericka."

"Nice name. I'll bet they call you Fred."

"How'd you guess?"

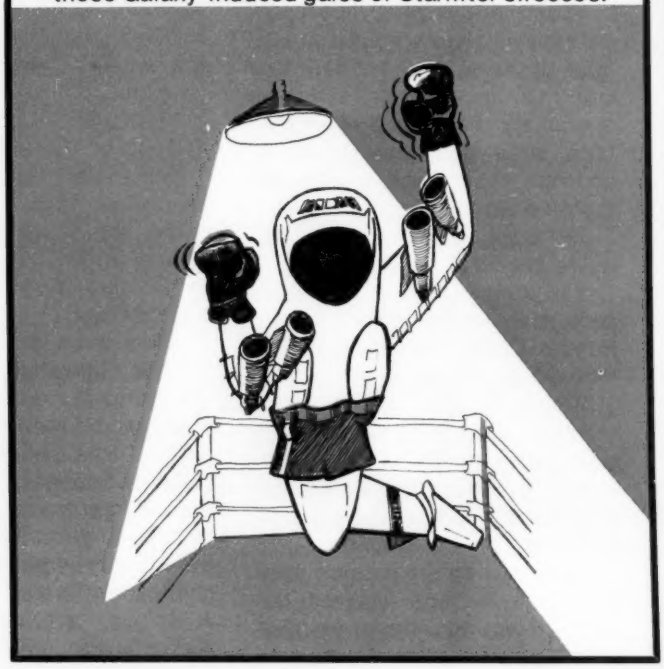
"Gut instinct," replied the Paunchus Pilot.

Our thanks to Colonel William C. Anderson USAF (Ret), for letting us adapt a story from his book, *When the Offspring Have Sprung*, for this C.R. Terror. Colonel Anderson, the originator of C.R. Terror, is the well-known author of *Hurrican Hunters, Pandemonium on the Potomac, Roll Up the Wallpaper, We're Moving*, and several other excellent books. —Ed.

Quick Stoppers

ROCKY

Jetblast, all by itself, can be pretty upsetting; but when it is peppered with projectiles, the results can be absolutely shattering. A C-5 pulling out of a parking spot at a southern base was forced to make a rather cramped turn in order to squeeze past another Galaxy. In the process of maneuvering on the ramp, enough power was applied at one point that the TF-39s propelled rocks and gravel into the windows of an army building adjacent to the aircraft parking area. Several window panes were cracked and punctured by the flying debris; resulting in holes ranging from a quarter-inch to four inches in size. Aircrews should insure that power bursts are kept to a minimum—especially when buildings, vehicles or other aircraft are located in the path of those Galaxy-induced gales or Starlifter siroccos.



Sentry Wounds C-130

A sentry was walking his post armed with a shotgun when he noticed an unauthorized vehicle in the vicinity. As he moved to investigate, he heard voices coming from a van located about 50 yards behind him. The door of the van was open and it appeared to the sentry it had been entered forcibly, so he reported the situation to his command post and loaded his weapon. When he was unable to find any intruders in the van, he returned to the hangar in a high state of agitation. As he moved through the building, under the wing of a C-130, he spotted an individual approaching the hangar doors. It was the sergeant of the guard coming to investigate, but when the sentry moved to challenge him, he accidentally discharged his shotgun. Fortunately for the sergeant of the guard, the blast struck the airplane, causing only a superficial wound in the aileron. Part of the cause for this incident was attributed to manpower shortages which have resulted in less than fully trained sentries, and the fact that this particular individual was trying to patrol an area that *two* guards would be hard-pressed to cover. Times are tough all over, but as an aircrewmember, you might be well advised to exercise care in approaching guarded airplanes, especially at night. Otherwise one of these jumpy *gendarmes* in a "high state of agitation" may inadvertently wing you instead of your airplane.

—Adapted from the USN *Weekly Summary*

If There's Doubt, Check It Out

When the CH-3E's gear handle was placed in the down position on an approach, the right main wheels failed to indicate lowered and locked. Recycling the gear netted the same results, but activation of the emergency extension system finally achieved green wheels all around. Still a bit skeptical, the crew elected to hover long enough before decking the chopper to permit installation of gear pins by the ground crew. . . just in case. This turned out to be a very wise move. Although the indicators showed everything set for landing, maintenance troops discovered the right main was not extended far enough to permit insertion of a gear pin. While the crew held the helo in a hover for the better part of a half-hour, a hydraulics specialist released enough pressure to allow the strut to be manually pulled down enough for pinning. Had the crew trusted the troublesome bogey's bogus status indication and landed without double-checking, there is a good chance the right main might have collapsed on touchdown with catastrophic results.

Flick of the Bic

It all happened when a private pilot was checking an airplane before setting off from a small airfield. Attempting to determine the fuel contents in the dark, he dipped his fingers into the tank, but found it difficult to gauge the fuel level by touch alone. Stepping back from the aircraft, he lit a match to "increase the light."

The effect exceeded his expectations.

—Adapted from RNZAF *Flight Safety*

QS

Rollercoaster Ride at FL 350

Starlifters have been experiencing their share of control problems lately, resulting in some rather abrupt uncommanded flight attitude changes. The following example makes a pretty good case for keeping at least loosely strapped in during flight unless you have a good reason to be out of your seat—and this holds true for both crewmembers and passengers. The copilot called for the descent checklist, and while the AC was momentarily busy with something else, the right seater flicked off the altitude hold portion of the autopilot. The instant "George" was partially relieved of duty, the C-141 pitched violently up with enough positive G's to squish a June bug. A few seconds and 1,500 feet of increased altitude later, the cantankerous cargo jet stopped climbing and pitched downward with an equally disconcerting number of negative G's. In less time than it takes to tell about it, the surprised AC grabbed the yoke, disengaged the rest of the autopilot and regained control of the truculent T-tail. Those pax unfortunate enough not to be restrained were lifted three or four feet into the air on the downswing, and one female located near the cargo was seriously injured after being thrown from her seat and landing atop a pallet. In all, nine passengers ended up making a trip to the hospital, and three had to be admitted for a variety of breaks, sprains, and contusions. How's that for an incentive to "Buckle Up"?

DID-U-KNOW?

You may already know that the tires on the C-5 (24 on the main landing gear, four on the nose landing gear) weight 4,214 pounds. But have you ever given any thought to what the air in those tires weighs when all of them are inflated to their prescribed pressure? The answer is 181 pounds.

AFTER DEADLINES

WE SHARE THE AIR every year with millions of fowl friends during bird migration season. This year bird strikes have already damaged several MAC airplanes. Fortunately, the distruction has been limited to engines and sheet metal. However, a bird injested into a C-5 engine caused damage costing $93,979, putting the bird strike into the minor aircraft accident catagory. Since birds are completely oblivious to air traffic control procedures and FARs, the aircrew is the best bird-avoidance device on any aircraft.

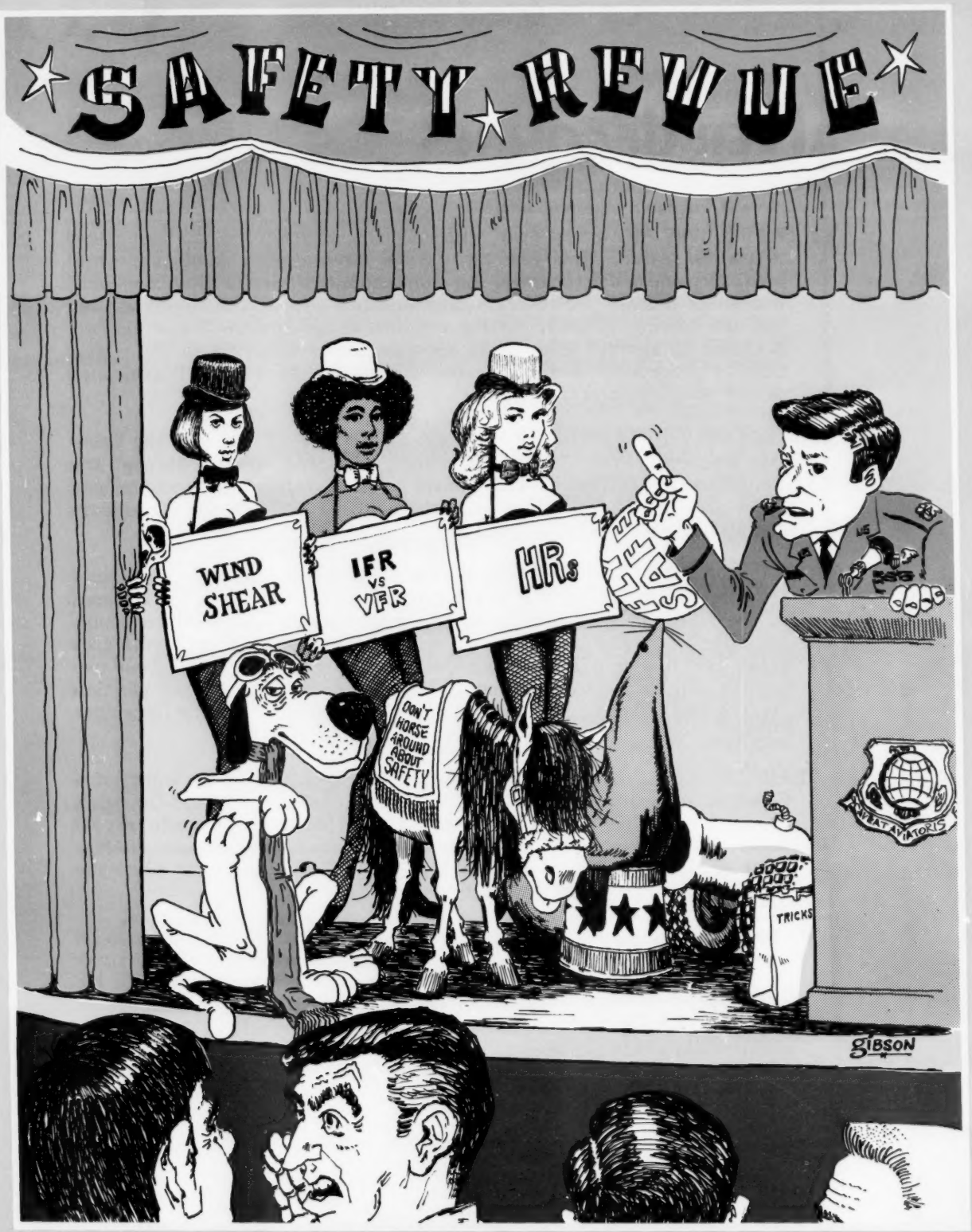
USAF HOLIDAY FATALITIES HIT A FIVE-YEAR LOW of one over the Labor Day weekend. Preliminary reports show that MAC made it through the Columbus Day holiday with no ground mishap fatalities. It would be nice if we could keep up the good work through the upcoming winter holidays and all come back safe for 1980.

PRODUCTION STRETCHED STARLIFTER COMPLETES TEST. Structural proof testing of the C-141B in the configuration that it will be delivered to the USAF in was recently completed. Hydraulic jacks, floor loads, and special cradles on the wings subjected the aircraft to stresses as great as it is ever expected to encounter during its lifetime. About two months will be required to analyze the test data. The first production Stretch Starlifter is scheduled for delivery to the USAF during December 1979.

A YEAR CAN MAKE NEARLY $500,000,000 DIFFERENCE in the worth of a C-5-load of gold. According to Clarence Lake, Lockheed-Georgia's Galaxy trivia expert, the aircraft could carry $616,903,200 worth of gold in July 1978. With no increase in aircraft payload, the Galaxy-size shipment of heavy metal was worth $1,028,172,000 a year later when the price of gold soared past $300 per ounce.

BEND OVER AND GRAB YOUR ANKLES or similar instructions may soon be included in commercial airline emergency procedures briefings for passengers. NTSB has asked FAA to determine the best brace position for passengers in emergency landings and require that they be included in preflight briefings. The recommendation is the result of four recent accidents in which passengers in brace positions survived or were much less seriously injured by crash forces which killed or seriously hurt "unbraced" people near them.

*U.S. GOVERNMENT PRINTING OFFICE: 1979-665-013/7



I hear this guy gives a better-than-average safety presentation